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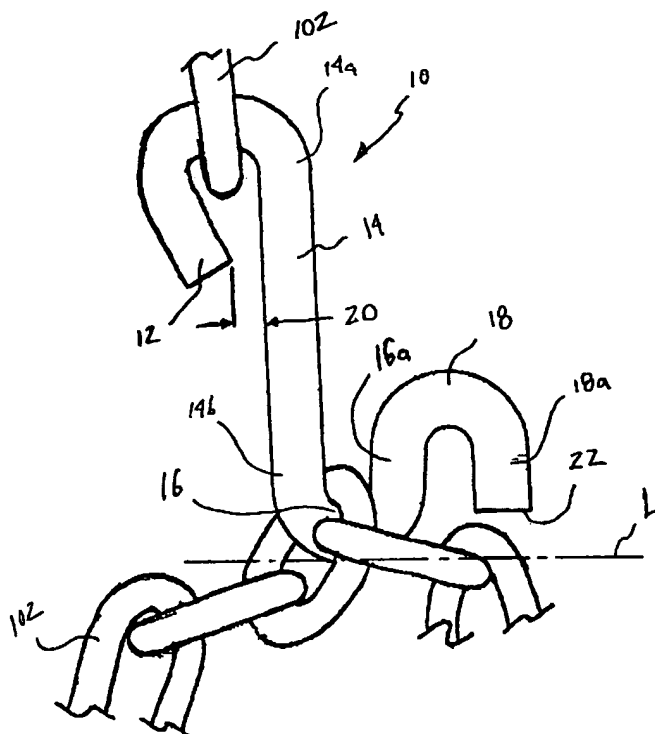
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(54) Titre : CROCHET DE SURETE A DOUBLE COURBURE

(54) Title: SECURITY HOOK WITH DOUBLE REVERSE BEND



(57) Abrégé/Abstract:

A safety hook including a main shaft portion, a chain receiving portion disposed at a first end of the main shaft portion, a first bend portion disposed at a second end of the main shaft portion, and a second bend portion depending from the first bend portion. The second bend portion bends in substantially the opposite direction of the first bend portion and has a terminal end that does not extend beyond the first bend portion.



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**Abstract**

A safety hook including a main shaft portion, a chain receiving portion disposed at a first end of the main shaft portion, a first bend portion disposed at a second end of the main shaft portion, and a second bend portion depending from the first bend portion. The second bend portion bends in substantially the opposite direction of the first bend portion and has a terminal end that does not extend beyond the first bend portion.

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PATENT

57111-5084

**SECURITY HOOK WITH DOUBLE REVERSE BEND**Field of the Invention

5 The present invention relates to security hooks, and more particularly to a security hook with a double reverse bend that resists unplanned disengagement from a chain or the like.

Background of the Invention

10 "S" hooks have been widely used as security chain end hooks, particularly in the trailer industry. FIG. 1 shows an example of a typical S-hook 100 on the end of a security chain 102. In the trailer industry, chains with S-hooks are used as added security between the trailer and a towing vehicle. In use, these hooks may be engaged in a hole or slot in a vehicle frame, over the flanged edge of a channel-type frame, or with another chain. Oftentimes, the security chain hook is routed through  
15 a vehicle tie-down loop or around a frame member with the end hook then engaged over or through a link of the security chain. However, during vehicle operation, the S-hook can sometimes come disengaged when the vehicle and trailer go over bumps or are otherwise jostled.

20 Different designs have been proposed to prevent disengagement of the S-hook during vehicle operation. For example, as shown in FIG. 2, an S-hook 110 having an end 112 that extends sideways therefrom is known. The end 112 helps prevent the S-hook from coming disengaged. However, such a design is not always effective.

25 U.S. Patent No. 1,214,717 to Schmidt teaches a safety hook. However, the end 17 of the safety hook extends beyond the lateral hook 14, thereby preventing use of the safety hook in some applications (described more fully herein below). If the end 17 did not extend beyond the lateral hook 14, the safety hook would not work for its intended purpose.

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A long felt need exists for a security hook that resists unintentional disengagement and overcomes the other disadvantages of the prior art.

#### Summary of the Preferred Embodiments

5 In accordance with a first aspect of the present invention there is provided a safety hook that includes a main shaft portion, a chain receiving portion disposed at a first end of the main shaft portion, a first bend portion disposed at a second end of the main shaft portion, and a second bend portion depending from the first bend portion. The second bend portion bends in substantially the opposite direction of the  
10 first bend portion and has a terminal end that does not extend beyond the first bend portion. In a preferred embodiment, the main shaft portion and the first bend portion are co-planar, thereby defining a plane, and the second bend portion is offset from the plane. In another preferred embodiment, the first bend portion includes a first straight portion and the second bend portion includes a second straight portion.  
15 Preferably, the first and second straight portions are substantially parallel to the main shaft portion.

In accordance with another aspect of the present invention there is provided a safety hook that includes a main shaft portion a chain receiving portion disposed at a first end of the main shaft portion, a first bend portion disposed at a second end of  
20 the main shaft portion, and a second bend portion depending from the first bend portion that bends in substantially the opposite direction of the first bend portion. The main shaft portion, the chain receiving portion, the first bend portion and the second bend portion are co-planar.

In accordance with another aspect of the present invention there is provided a  
25 device having an opening and an undersurface in combination with a safety hook including a generally backwards S-shaped element connected to a generally J-shaped element, a first end of the generally S-shaped element being a free end. A portion of the S-shaped element is disposed within the opening of the device and the free end of the generally S-shaped element is disposed adjacent the undersurface of the  
30 device.

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In accordance with yet another aspect of the present invention there is provided a method for hooking two devices together. The first device has an opening and an undersurface and the second device has an opening. The method includes the steps of providing a hook having at least two U-shaped elements, at least one of the at  
5 least two U-shaped elements having an end, hooking one of the U-shaped elements through an opening, hooking another U-shaped element through another opening, and positioning a free end of the other U-shaped element adjacent the undersurface.

Other objects, features and advantages of the present invention will become apparent to those skilled in the art from the following detailed description. It is to be  
10 understood, however, that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration and not limitation. Many changes and modifications within the scope of the present invention may be made without departing from the spirit thereof, and the invention includes all such modifications.

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#### Brief Description of the Drawings

The invention may be more readily understood by referring to the accompanying drawings in which

FIG. 1 is a side elevational view of a prior art S-hook.

20 FIG. 2 is a perspective view of another prior art S-hook.

FIG. 3 is a side elevational view of a security hook engaged with a chain in accordance with a first embodiment of the present invention.

FIG. 4 is a front elevational view of the security hook of Figure 3.

25 FIG. 5 is a side elevational view of the security hook of Figure 3 engaged with a hole in a platform, showing the end portion not extending beyond the first bend portion.

FIG. 6 is a side elevational view of a security hook engaged with a chain in accordance with a second embodiment of the present invention.

FIG. 7 is a front elevational view of the security hook of Figure 6.

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FIG. 8 is a perspective view of a towing vehicle coupled to a trailer and having the security hook of Figure 3 in combination with a chain as added security therebetween.

Like numerals refer to like parts throughout the several views of the drawings.

5

#### Detailed Description of the Preferred Embodiments

Referring to Figures 3-4, a first embodiment of a security hook 10 is shown.

The security hook 10 generally includes a chain receiving portion 12, a main shaft portion 14, a first bend portion 16 and a second bend portion 18. For  
10 exemplary purposes only, the security hook 10 (and accompanying security chain 102) is described herein for as added security in coupling a trailer to a towing vehicle. It will be understood that those skilled in the art will be able to use the security hook 10 for other purposes. It will be appreciated that terms such as "below," "forwardly," "rearwardly," "upwardly," "downwardly" and "sideways" used herein are used merely  
15 for ease of description and refer to the orientation of the components as shown in the Figures. It should be understood that any orientation of the security hook 10 described herein is within the scope of the present invention.

The entire security hook 10 is preferably formed out of a piece of metal bar stock. Alternatively, the different elements of the security hook 10 can be welded  
20 together. It will be understood that the security hook 10 can be made of any rigid material, such as metal, plastic, etc. The main shaft portion 14 has first and second opposite ends 14a, 14b. The chain receiving portion 12 is disposed at the first end 14a of the main shaft portion 14. The chain receiving portion 12 can be formed by bending the end of the metal bar stock toward the main shaft portion 14, thereby  
25 forming a gap 20 that is small enough to prevent a chain link from sliding off of the chain receiving portion 12. In an alternative embodiment, the chain receiving portion 12 can be an eye that is welded to the end of the main shaft portion 14.

As shown in FIG. 3, the first bend portion 16 extends from the second end 14a of the main shaft portion 14 and includes a straight portion 16a. Preferably, the first  
30 bend portion 16 bends to the opposite side of the main shaft portion 14 as the chain

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receiving member 12. However, this is not a limitation on the present invention. In a preferred embodiment, the first straight portion 16a is substantially parallel with the main shaft portion 14. However, this is also not a limitation on the present invention.

5 The second bend portion 18 extends from first straight portion 16a and includes second straight portion 18a that terminates in end portion 22. Second bend portion 18 bends in the opposite direction as first bend portion 16. This is best illustrated in FIG. 3. As shown in FIG. 3, first bend portion 16 bends upwardly from main shaft portion 14 and second bend portion 18 bends downwardly from first straight portion 16a. In a preferred embodiment, the second straight portion 18a is substantially  
10 parallel with the first straight portion 16a and the main shaft portion 14. However, this is also not a limitation on the present invention.

Preferably, end portion 22 does not extend beyond (or below, as shown in FIG. 3) first bend portion 16. This is illustrated in FIG. 3 by line L which extends from first bend portion 16. If end portion 22 extended beyond line L, the security hook 10  
15 could not be used in some applications. For example, as shown in FIG. 5, where the security hook 10 is engaged with a hole 112 in a platform 114 having an undersurface 114a, such as a platform on the back of a towing vehicle (as shown in FIG. 8). If the end portion 22 extended beyond the first bend portion 16, the end portion 22 would contact the platform 114 and cause the security hook 10 to rest  
20 in an awkward and inefficient position.

As shown in FIG. 4, in the first embodiment, the main shaft portion 14, first bend portion 16 (including first straight portion 16a) and second bend portion 18 (including second straight portion 18a) are co-planar and define a plane P.

Referring to FIGS. 6-7, a second embodiment of a security hook 60 is shown.  
25 The second embodiment is similar to the first embodiment and like numerals refer to like elements. However, in this embodiment, the second bend portion 18 (including the second straight portion 18a) is not co-planar with (i.e., is offset from) the first bend portion 16 and the main shaft portion 14. As an example, as shown in FIG. 7, the second bend portion 18 bends/extends from the first straight portion 16a in a

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direction substantially perpendicular with the plane P defined by the main shaft portion 14 and the first bend portion 16.

Referring to FIG. 8, an exemplary use of the security hooks 10, 60 is shown (security hook 10 is used in the example). As shown, a chain 102 extends from a trailer 116 and is engaged with the hole 112 on the platform 114 of a towing vehicle 118. To engage the security hook 10 with the hole 112, the end portion 22 is first inserted into the hole 112 and the security hook 10 is pivoted forwardly as the second straight portion 18a enters the hole until the second hook portion 18 is received in the hole 112. At such point as the first and second straight portions 16a, 18a are substantially parallel with the platform, the security hook is pivoted in a sideways direction about the second hook portion 18 (approximately 180°) until the security hook 10 extends rearwardly. The security hook 10 is then pivoted downwardly such that the first straight portion 16a is received in the hole 112. Once the first hook portion 16 is received in the hole 112 the process is completed, and the security hook 10 is at rest in the position shown in FIG. 5. Obviously, the steps of this process can be modified as necessary.

The embodiments of the present invention recited herein are intended to be merely exemplary and those skilled in the art will be able to make numerous modifications to them without departing from the spirit of the present invention. For example, the first and second straight portions 16a, 18a may be omitted; the first and second straight portions 16a, 18a may be non-parallel with each other and/or with the main shaft portion 14; the first hook portion 16 may be offset from the plane defined by the main shaft portion 14 and the chain receiving portion 12; the end portion 22 may extend beyond the first bend portion 16. All such modifications are intended to be within the scope of the present invention as defined by the claims appended hereto.

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What is claimed is:

1. A safety hook comprising:
  - (a) a main shaft portion
  - (b) a chain receiving portion disposed at a first end of said main shaft portion
  - (c) a first bend portion disposed at a second end of said main shaft portion,  
and
  - (d) a second bend portion depending from said first bend portion that bends in substantially the opposite direction of the first bend portion, wherein said second bend portion has a terminal end that does not extend below said first bend portion.
2. The safety hook of claim 1 wherein said main shaft portion, said first bend portion and said second bend portion are co-planar.
3. The safety hook of claim 1 wherein said main shaft portion and said first bend portion are co-planar, thereby defining a plane, and wherein said second bend portion is offset from said plane defined by said main shaft portion, said chain receiving portion, and said first bend portion.
4. The safety hook of claim 1 further comprising a chain received in said chain receiving portion.
5. The safety hook of claim 1 wherein said first bend portion includes a straight portion.
6. The safety hook of claim 5 wherein said straight portion is substantially parallel to said main shaft portion.
7. The safety hook of claim 1 wherein said second bend portion includes a straight portion.

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8. The safety hook of claim 7 wherein said straight portion is substantially parallel to said main shaft portion.

9. The safety hook of claim 6 wherein said second bend portion includes a straight portion.

10. The safety hook of claim 9 wherein said straight portion of said second bend portion is substantially parallel to said main shaft portion and said straight portion of said first bend portion.

11. A safety hook comprising:

- (a) a main shaft portion,
- (b) a chain receiving portion disposed at a first end of said main shaft portion,
- (c) a first bend portion disposed at a second end of said main shaft portion,

and

(d) a second bend portion depending from said first bend portion that bends in substantially the opposite direction of the first bend portion,

wherein said main shaft portion, said chain receiving portion, said first bend portion and said second bend portion are co-planar.

12. The safety hook of claim 11 wherein said first bend portion includes a straight portion.

13. The safety hook of claim 12 wherein said straight portion is substantially parallel to said main shaft portion.

14. The safety hook of claim 11 wherein said second bend portion includes a straight portion.

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15. The safety hook of claim 14 wherein said straight portion is substantially parallel to said main shaft portion.

16. The safety hook of claim 13 wherein said second bend portion includes a straight portion.

17. The safety hook of claim 16 wherein said straight portion of said second bend portion is substantially parallel to said main shaft portion and said straight portion of said first bend portion.

18. A trailer and towing vehicle in combination, wherein said trailer is coupled to said towing vehicle, and wherein a security hook of claim 1 is engaged with a hole on said towing vehicle, said security hook of claim 1 including a chain that extends rearwardly and is affixed to said towing vehicle.

19. In combination with a device having an opening and an undersurface, a safety hook comprising a generally backwards S-shaped element connected to a generally J-shaped element, a first end of the generally S-shaped element being a free end, wherein a portion of the S-shaped element is disposed within the opening of the device and the free end of the generally S-shaped element is disposed adjacent the undersurface of the device.

20. The combination of claim 19 wherein said J-shaped element includes a chain link engaged therewith.

21. A method for hooking two devices together, the first device having an opening and an undersurface, the second device having an opening, the method comprising the steps of:

a) providing a hook having at least two U-shaped elements, at least one of the at least two U-shaped elements having an end,

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- b) hooking one of the U-shaped elements through an opening,
- c) hooking another U-shaped element through another opening, and
- d) positioning a free end of the other U-shaped element adjacent the undersurface.

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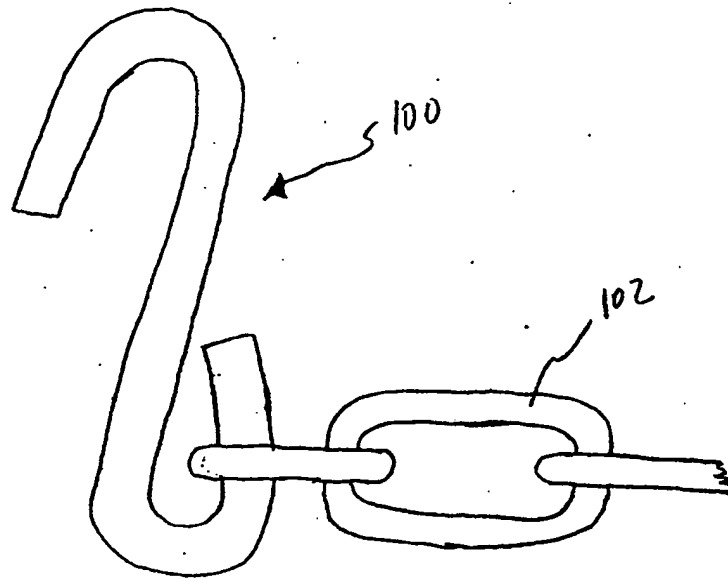


FIG. 1 (PRIOR ART)

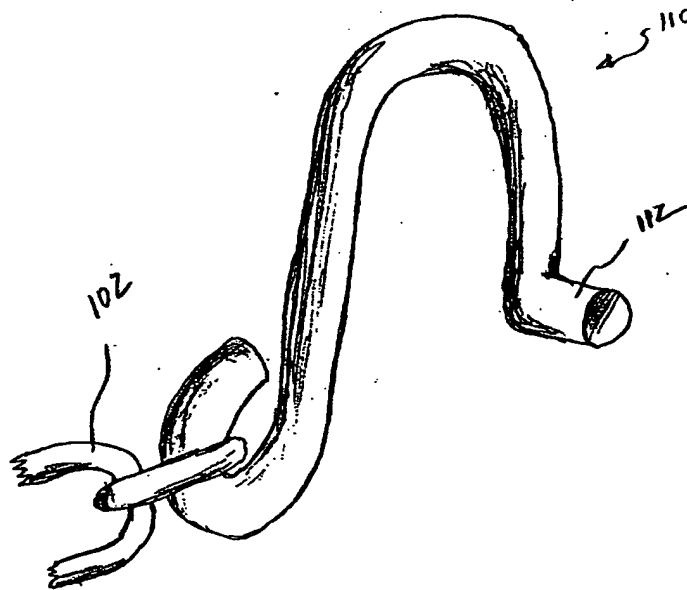
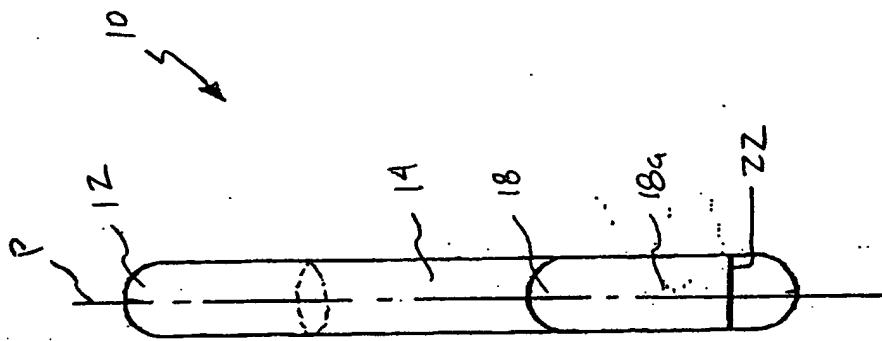
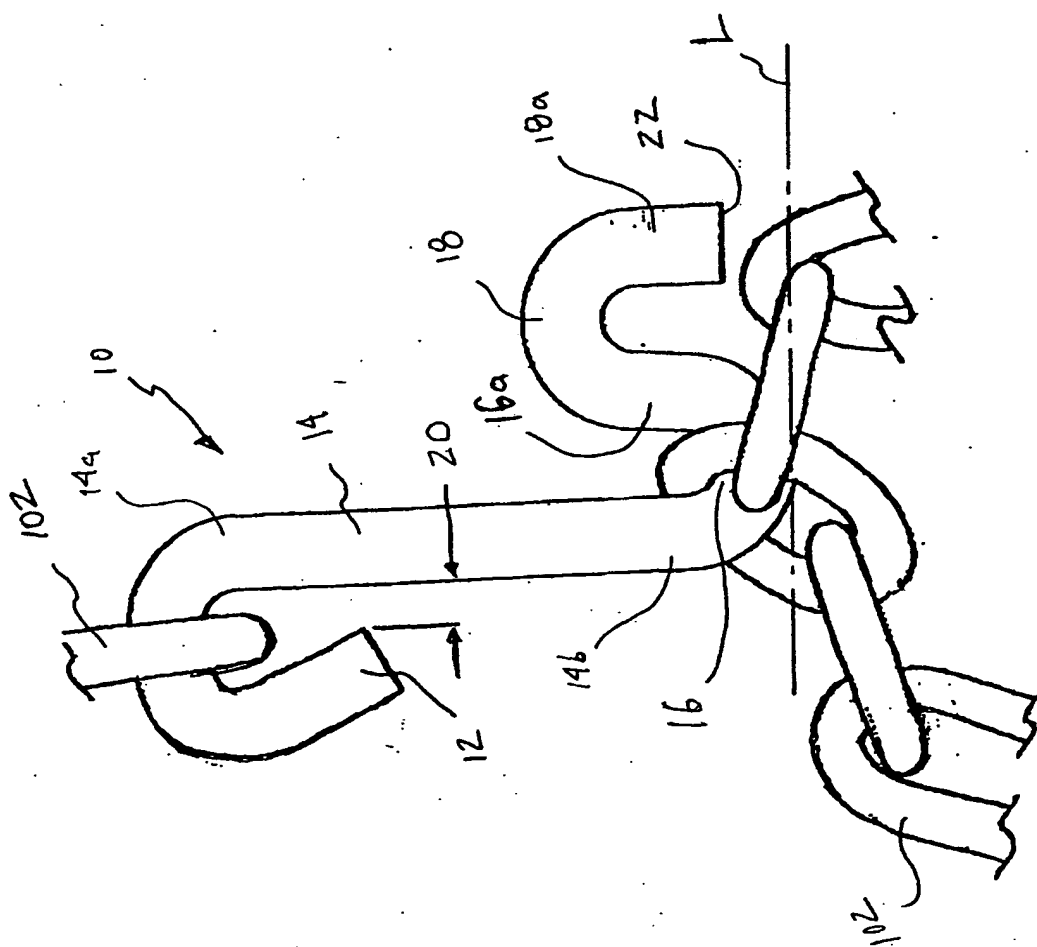


FIG. 2 (PRIOR ART)



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G.  
F.



Li-C-M

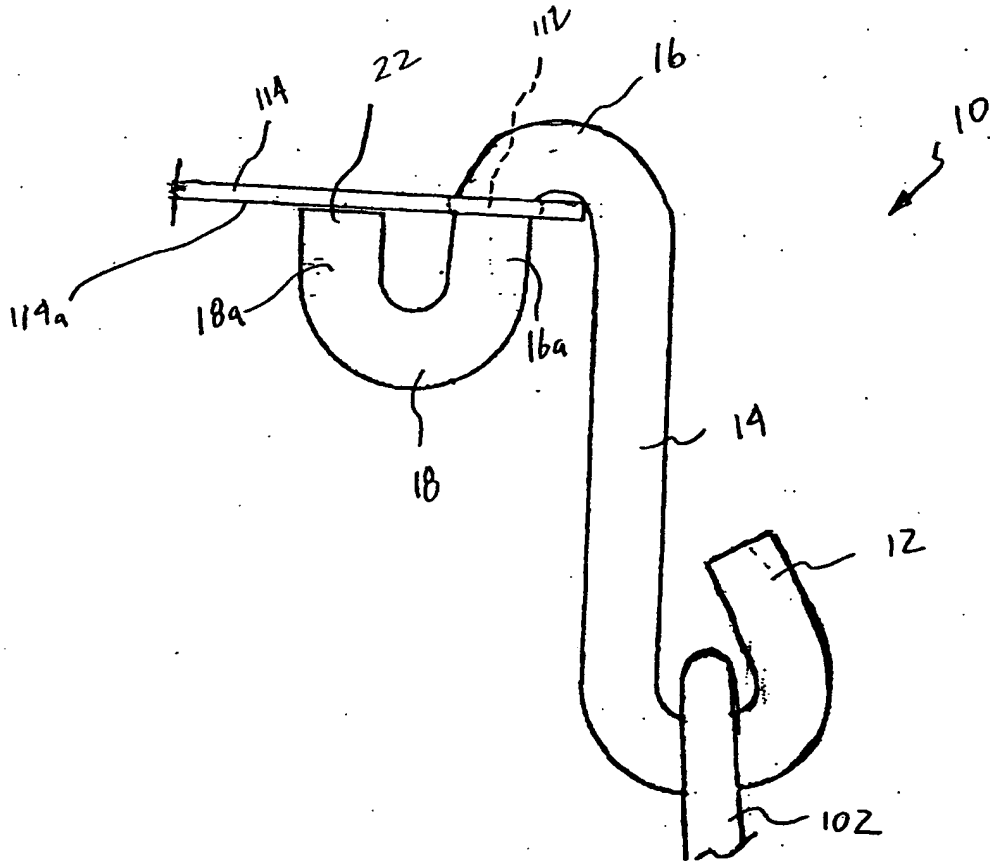


FIG. 5

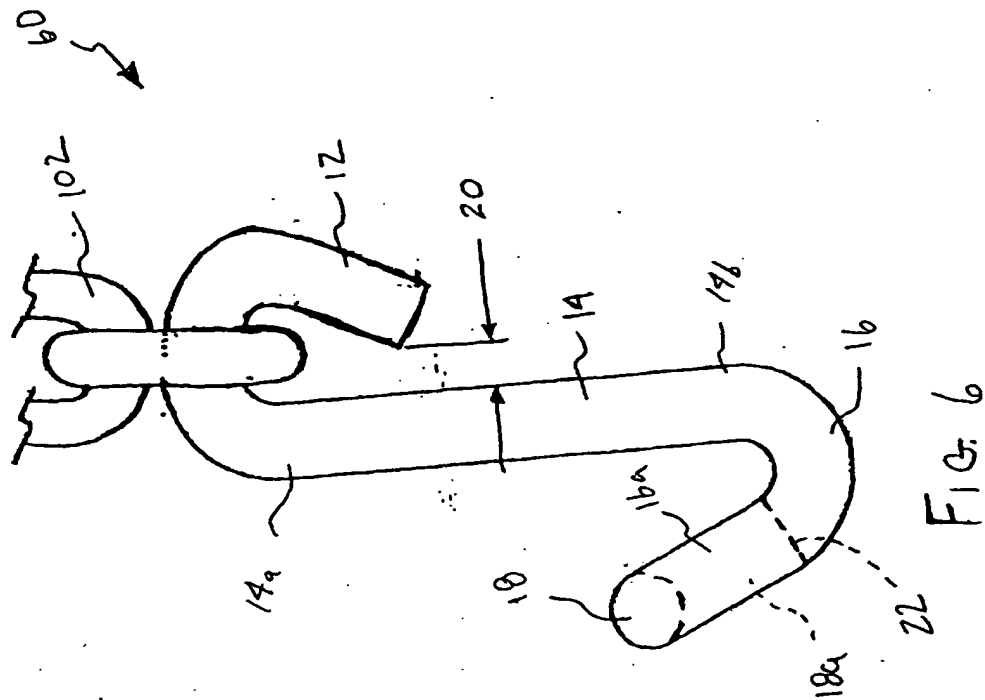
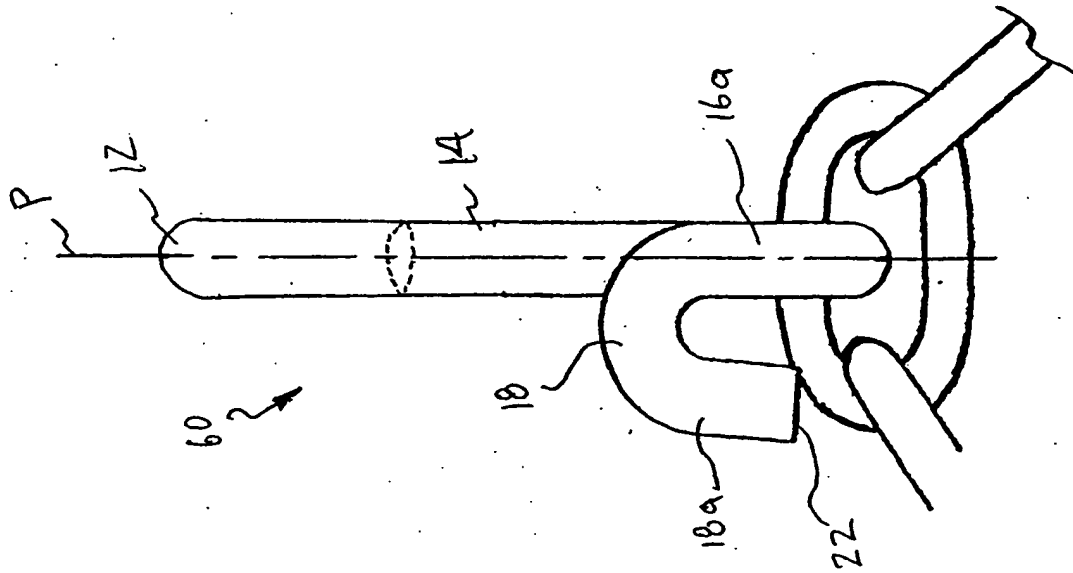




FIG. 8

